

Appl. No. 08/936,344
Amdt. Dated April 30, 2007
Reply to Office Action of January 3, 2007

REMARKS/ARGUMENTS

Claims 2-4 and 6-15 are pending in the present application.

This Amendment is in response to the Office Action mailed January 3, 2007. In the Office Action, the Examiner rejected claims 2, 3, 6, 7, 9, 13, and 15 under 35 U.S.C. §102(e); and claims 4, 8, 10, 11, 12, 14 under 35 U.S.C. §103(a). Applicant has amended claim 3 and 6. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 102

1. In the Office Action, the Examiner rejected claims 2, 3, 6, 7, 9, 13, and 15 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,577,044 issued to Oxford ("Oxford"). Applicants respectfully traverse the rejection and contend that the Examiner has not met the burden of establishing a prima facie case of anticipation.

Oxford discloses an enhanced serial data bus protocol for audio data transmission and reception. A computer system includes a processor 102 and an optional digital signal processor (DSP) 103 for processing audio information (Oxford, col. 4, lines 17-18), a main memory 104 for storing information and instructions for processor 102 and DSP 103 (Oxford, col. 4, lines 18-22). Serial I/O interface (SIO) 201 is coupled to audio converters 204-207 as a data interface to audio devices (Oxford, col. 4, lines 66-67; col. 5, line 1).

Oxford does not disclose, either expressly or inherently, at least (1) providing a plurality of memory banks where each memory bank is accessible to the first and second processors for operations selected from the group comprising read and write operations, (2) storing subsets of said audio data in the plurality of memory banks in equal allocation where the subsets correspond to equally distributed groups of audio channels, and (3) a first processor and a second processor coupled to said first and second busses, respectively.

Oxford merely discloses main memory to store information and instructions for processor 102 and DSP 103 (Oxford, col. 4, lines 18-22), not memory banks accessible to the first and second processors and storing subsets of audio data. The main memory 104 does not store subsets of audio data. Furthermore, Oxford merely discloses a single bus (bus 101) to connect to both processor 102 and DSP 103 (Oxford, Fig. 1, elements 101, 102 and 103), not first and second busses coupled to first and second processors, respectively.

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Moreover, Oxford merely discloses a stereo audio converter subsystem that processes stereo audio inputs (Oxford, col. 6, lines 21-23; line 54-60), not storing audio data in equal allocation with subsets of audio data corresponding to equally distributed groups of audio channels. To clarify this aspect of the invention, claims 3 and 6 have been amended.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Vergegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the...claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989). Since the Examiner failed to show that Oxford teaches or discloses any one of the above elements, the rejection under 35 U.S.C. §102 is improper.

Therefore, Applicants believe that independent claims 3 and 6 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicants respectfully request the rejection under 35 U.S.C. §102(c) be withdrawn.

Rejection Under 35 U.S.C. § 103

2. In the Office Action, the Examiner rejected claims 4 and 8 under 35 U.S.C. §103(a) as being unpatentable over Oxford as applied to claims 1 and 6 above in view of International Publication Number WO 90/0718 ("Von Nostrand"); claims 10 and 11 under 35 U.S.C. §103(a) as being unpatentable over Oxford as applied to claims 1 and 6 above in view of U.S. Patent No. 5,313,339 issued to Fukami et al. ("Fukami"); and claims 12 and 14 under 35 U.S.C. §103(a) as being unpatentable over Oxford as applied to claims 1 and 6 above in view of U.S. Patent No. 5,194,996 issued to Shores ("Shores").

Applicants respectfully traverse the rejection and contend that the Examiner has not met the burden of establishing a prima facie case of obviousness. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references

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when combined) must teach or suggest all the claim limitations. *MPEP §2143, p. 2100-129 (8th Ed., Rev. 2, May 2004)*. Applicants respectfully contend that there is no suggestion or motivation to combine their teachings, and thus no *prima facie* case of obviousness has been established.

1) Claims 4 and 8:

In the Office Action, the Examiner rejected claims 4 and 8 under 35 U.S.C. §103(a) as being unpatentable over Oxford as applied to claims 1 and 6 above in view of Von Nostrand.

Oxford discloses an enhanced serial data bus protocol for audio data transmission and reception as discussed above in the 35 U.S.C. §102 rejection.

Van Nostrand discloses a method and apparatus for handling high speed data. Video data are written into two banks of memory. Each bank is further divided into odd and even. Continuous data stream can be written into these two banks without interruption. Each of the memory arrays within each bank can be a video random access memory (VRAM). Memory arrays in bank A and bank B include shift registers (Van Nostrand, page 3). Van Nostrand merely discloses one stream of video data. A control circuit automatically selects odd/even pixel data to write to memory. The stream of video data of odd and even pixels are first routed to shift registers within one bank, bank A. Only when bank A has been filled, the stream of video data is shifted to bank B (Van Nostrand, page 7).

As argued in the 35 U.S.C. §102 rejection, Oxford does not disclose or suggest any elements of independent claims 3 and 6. Accordingly, a combination of Oxford with any other references in rejecting claims 4 and 8, which depend on claim 3 and 6, respectively, is improper.

Furthermore, Van Nostrand merely discloses a technique to handle high speed data from a single source of image (Van Nostrand, page 4, lines 20-29). Van Nostrand, therefore, differs from the claimed invention in at least two aspects: (1) Van Nostrand does not disclose different groups of channels, only digitized images; and (2) The data stream is for image data, not corresponding to audio data. The use of Video RAM (VRAM) is only suitable for pixel data, or image data.

2) Claims 10 and 11:

Oxford discloses an enhanced serial data bus protocol for audio data transmission and reception as discussed above in the 35 U.S.C. §102 rejection.

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Fukami discloses an apparatus using a rotary head for recording digital video and audio signals at double speed. A digital signal processing (DSP) circuit 26 assigns a digital audio signal DA1 to data memory regions where the right and left channels of the digital audio signal are assigned in an ordinary interleave process (Fukami, col. 4, lines 17-22).

As argued in the 35 U.S.C. §102 rejection, Oxford does not disclose or suggest any elements of independent claims 3 and 6. Accordingly, a combination of Oxford with any other references in rejecting claims 10 and 11, which depend on claim 3 and 6, respectively, is improper.

Furthermore, Fukami merely discloses a single memory circuit 30 accessible to only to the DSP circuit 26 (Fukami, col. 4, lines 4-5; Figure 3, element 30), not to first and second processors. Therefore, Fukami does not disclose storing the subsets of audio data in the memory banks in an interleaving manner. In addition, Fukami merely discloses storing the recording signal DR in the memory circuit 30 (Fukami, col. 4, lines 4-5), not subsets of real-time audio data corresponding to different groups of audio channels. Furthermore, Fukami merely discloses processing audio and video signals from a video tape recorder (Fukami, col. 2, lines 45-49), not real-time audio data. Accordingly, Fukami does not disclose or suggest storing subsets of real-time audio data in a plurality of memory banks in an interleaving manner.

3) Claims 12 and 14:

Oxford discloses an enhanced serial data bus protocol for audio data transmission and reception as discussed above in the 35 U.S.C. §102 rejection.

Shores discloses a digital audio recording format for motion picture film. The interleave of audio data samples is achieved by storing non-interleaved input data for each audio channel into successive memory locations. While data samples are stored in a first half of memory, data samples are recovered, in interleaved order, from a second half of memory (Shores, col. 10, lines 17-30).

As argued in the 35 U.S.C. §102 rejection, Oxford does not disclose or suggest any elements of independent claims 3 and 6. Accordingly, a combination of Oxford with any other references in rejecting claims 12 and 14, which depend on claim 3 and 6, respectively, is improper.

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Furthermore, Shores merely discloses a single memory being divided into two halves, each half having equal sized groups of successive memory locations (Shores, col. 10, lines 22-24; Figure 12, element 33), not storing in one of the memory banks and reading the stored data from another one of the memory banks.

In summary, there is no motivation to combine Oxford, Von Nostrand, Fukami, and Shores because none of them addresses the problem of memory allocation for real-time audio processing. There is no teaching or suggestion that a plurality of memory banks accessible to first and second processors and used for storing subsets of real-time audio data in equal allocation from equally distributed groups of audio channels is present. Oxford, read as a whole, does not suggest the desirability of using odd- and even-numbered audio channels, interleaving of data, or storing in one memory bank and read from another memory bank. For the above reasons, the rejections under 35 U.S.C. §103(a) are improperly made.

"When determining the patentability of a claimed invention which combined two known elements, 'the question is whether there is something in the prior art as a whole suggest the desirability, and thus the obviousness, of making the combination.'" In re Beattie, Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ (BNA) 481, 488 (Fed. Cir. 1984). To defeat patentability based on obviousness, the suggestion to make the new product having the claimed characteristics must come from the prior art, not from the hindsight knowledge of the invention. Interconnect Planning Corp. v. Feil, 744 F.2d 1132, 1143, 227 USPQ (BNA) 543, 551 (Fed. Cir. 1985). To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the Examiner to show a motivation to combine the references that create the case of obviousness. In other words, the Examiner must show reasons that a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the prior elements from the cited prior references for combination in the manner claimed. In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1996), 47 USPQ 2d (BNA) 1453. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973. (Bd.Pat.App.&Inter. 1985).

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The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Furthermore, although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." In re Mills 916 F.2d at 682, 16 USPQ2d at 1432; In re Fitch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

In the present invention, the cited references do not expressly or implicitly suggest using equal allocation, equally distributed groups, odd- and even-numbered audio channels, interleaving of data, or storing in one memory bank and read from another memory bank. In addition, the Examiner failed to present a convincing line of reasoning as to why a combination of Oxford, Von Nostrand, Fukami, and Shores is an obvious application of memory allocation of real-time audio processing.

Therefore, Applicants believe that independent claims 3 and 6 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicants respectfully request the rejection under 35 U.S.C. §103(a) be withdrawn.

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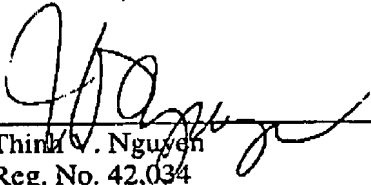
Conclusion

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Dated: April 30, 2007

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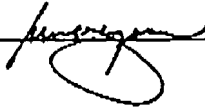
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